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Thesis Title:
The Genetic Basis of Human Height: The Role of Estrogen

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Citation:

Height is a complex physical trait that displays strong heritability. Estrogen plays a major role in regulating longitudinal bone growth and is responsible for inducing the pubertal growth spurt and fusion of the epiphyseal growth plates. However, the mechanism by which estrogen terminates linear growth is poorly understood. The overall objective of this study was to gain a greater understanding of the molecular mechanisms behind estrogen-mediated growth and height attainment by examining gene regulation in chondrocytes and the role of some of these genes in normal height inheritance.

This study provided additional evidence that estrogen and the ERα gene are major factors in the regulation of growth and the determination of adult height. Gene expression studies identified several estrogen regulated genes and synergistic studies incorporating GH revealed the ability of estrogen to attenuate the effects of GH on MMP13 expression, revealing potential pathways by which estrogen may regulate growth plate fusion, longitudinal bone growth and even arthritis.